YANGON UNIVERSITY OF ECONOMICS

DEPARTMENT OF STATISTICS

POST GRADUATE DIPLOMA IN RESEARCH STUDIES

RELATION BETWEEN EXPORTS, FOREIGN DIRECT
INVESTMENT, INFLATION, AND GROSS DOMESTIC
PRODUCT: EVIDENCE FROM MYANMAR

JUNE, 2023

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This research paper is submitted to the Board of Examination as partial fulfillment of the requirement for the Postgraduate Diploma in Research Studies
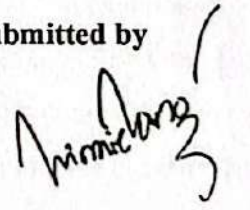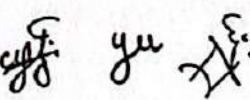
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ABSTRACT

This study examined the relationship between exports, FDI, inflation, and GDP in Myanmar from 1989 to 2019. Secondary data from the World Bank were used in the study. Descriptive statistics, Pearson's correlation coefficient, and multiple regression models were used in this study. Myanmar's GDP pointed out the economic growth despite fluctuations and notable events. FDI as a percentage of GDP exhibited inconsistent trends over time. Exports of goods and services displayed an increasing trend, reflecting economic growth, while inflation rates fluctuated over time. According to correlation analysis, there is a strong positive relationship between exports and GDP, but inflation is negatively related to GDP. Regarding the results of multiple regression model, exports and inflation significantly influence on GDP. It can be seen that exports have a positive effect on GDP, whereas inflation has a negative effect on GDP. These findings emphasize the importance of exports and inflation management for sustainable economic growth in Myanmar, informing policymakers, researchers, and stakeholders. Further analysis, considering additional factors and indicators, would enhance understanding of Myanmar's economic dynamics.

ACKNOWLEDGEMENTS

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
ANOVA	Analysis of Variance
ARDL	Autoregressive Distributed Lag
ASEAN	Association of Southeast Asian Nations
FDI	Foreign Direct Investment
FESR	Framework for Economic and Social Reforms
GDP	Gross Domestic Product
MSE	Mean Square Error
MSR	Mean Square Regression
OECD	Organisation for Economic Co-operation and Development
SSE	Sum of Squares Error
SSR	Sum of Squares Regression
SST	Total Sum of Squares

CHAPTER I
INTRODUCTION

As a developing country with significant economic reforms, Myanmar has experienced remarkable economic growth in recent years. Following the political transition, favorable circumstances such as improvements in transparency, imposing new laws, and lifting some restrictions attract domestic and foreign investment. This study examines the relationships between exports, FDI, inflation, and GDP in Myanmar from 1989 to 2019.

1.1   Rationale of the Study

As economic growth attracts attention from various stakeholders, there comes more interest in understanding the factors driving this growth. However, a comprehensive understanding of the relationships between drivers of economic growth such as exports and Foreign Direct Investment (FDI), and measures of economic performance such as inflation and Gross Domestic Product (GDP) is still lacking. Therefore, this study aims to bridge this knowledge gap by examining the interplay between those factors and measures of Myanmar's economy and providing empirical evidence to shed light on these relationships.

Exports have been a significant component of Myanmar's economic growth, contributing to the country's foreign exchange earnings and international trade. Understanding the dynamics of export performance and its relationship with other economic variables is essential for formulating effective trade policies and promoting sustainable economic development.

FDI has been recognized as a catalyst for economic growth in many countries. In the case of Myanmar, attracting FDI has been a priority for the government, as it can bring in capital, technology, and employment opportunities. Assessing the impact of FDI on the economy, particularly its relationship with exports and GDP will provide valuable insights into the effectiveness of FDI policies and their contribution to Myanmar's economic development.

Inflation, as a measure of the general increase in prices, can have significant implications for a country's economic stability and growth. Understanding the relationship between inflation and other economic variables, such as exports, FDI, and

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GDP, is crucial for policymakers to formulate effective monetary policies and ensure price stability.

GDP is a key indicator of a country's economic performance, reflecting the total value of goods and services produced within its borders. Analyzing the relationships between exports, FDI, inflation, and GDP will provide insights into how these variables interact and influence Myanmar's overall economic growth.

This study aims to provide empirical evidence on the relationships between exports, FDI, inflation, and GDP in Myanmar. By examining the data from 1989 to 2019 using a multiple regression model, the study seeks to contribute to a better understanding of how these variables interact and influence Myanmar's economic growth.

1.2 Objectives of the Study

The main objective of this study is to examine the relationships between exports, FDI, inflation, and GDP in Myanmar between 1989 and 2019.

The specific Objectives of the study are:

i. To describe the exports, FDI, inflation, and GDP of Myanmar between 1989 and 2019.

ii. To examine the impact of exports, FDI, and inflation on GDP in Myanmar between 1989 and 2019.

1.3 Method of Study

This study utilizes a quantitative research approach to examine the relationship between exports, FDI, inflation, and GDP in Myanmar. Secondary data from the World Bank's dataset for Myanmar was utilized, covering the relevant period for analysis. Descriptive statistics, Pearson's correlation coefficient analysis, the multiple regression model were employed to assess the impacts of exports, FDI, and inflation on GDP. The data cover the period from 1989 to 2019.

1.4 Scope and Limitations of the Study

This study focuses on the relation of exports, FDI, inflation, and GDP of Myanmar between 1989 and 2019. The limitations of the study include the availability and reliability of data, the potential for omitted variables, and the generalizability of the findings beyond Myanmar. The study focused on only four variables, (exports, FDI,

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GDP, and inflation) and thus it is acknowledged that there may be other important factors or variables that could have influenced the outcomes but were not included. This limitation may restrict the comprehensive understanding of the topic.

1.5   Organization of the Study

This study is organized into five chapters. Chapter I provides an introduction, including the rationale of the study, objectives of the study, method of the study, scope of the study, and limitations of the study and organization of study. Chapter II presents a literature review of previous studies on the relationship between exports, FDI, inflation, and GDP. Chapter III describes the data sources, variables, and analytical methods used in the study. Chapter IV presents the empirical results and findings of the study. Finally, Chapter V concludes the study and provides policy recommendations based on the findings.

CHAPTER II
LITERATURE REVIEWS

Among the economic factors, exports and FDI are considered drivers of economic growth, while inflation and GDP are indicators or measures of economic performance. Theoretically, it is considered that exports and foreign direct investment are factors that can actively drive economic growth, while inflation and GDP are indicators used to assess economic performance. This chapter includes exports, FDI, inflation, GDP, and a review of previous studies.

2.1   Exports

Exports refer to the goods and services produced within a country's borders and sold to buyers in other countries. Exports can include a wide range of goods and services. Goods exports encompass physical products such as manufactured goods, agricultural produce, raw materials, machinery, and consumer goods. Service exports involve intangible services like tourism, transportation, financial services, consulting, software, and more. Exporting offers several advantages for a country's economy. It can stimulate economic growth by increasing production, generating revenue, creating employment opportunities, and fostering innovation and competitiveness. Exporting also allows countries to take advantage of comparative advantages, specialize in specific industries or sectors, and access larger international markets. Exports are an essential component of international trade and play a significant role in the economic development of nations.

Governments and trade organizations often engage in export promotion activities to support and encourage businesses to export. These initiatives can include providing financial incentives, trade missions, export training programs, market intelligence, trade fairs and exhibitions, and diplomatic efforts to improve trade relations with other countries.

The primary exports of Myanmar are agricultural products, forest products, fishery products, metals and minerals, precious stones, and manufactured goods. Certain commodities whose export is occasionally restricted are permitted to be exported in accordance with the applicable rules and regulations. Although rice and other restricted crops (with the exception of credible oil seeds) and rubber are prohibited for export by the private sector, agricultural products from the large farm leased to the

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private sector as part of land reclamation are allowed to be exported. Government programs are permitted to export. Typically, registered exporters/importers have the right to export all commodities, with the exception of rice and rice products and other products that are restricted to being exported exclusively by State-owned Economic Enterprises. A total of thirty-one items, including teak, rice, etc., cannot be exported abroad or across borders. Normal Letter of Credit, Transit Trade Account Trade, Counter Trade, Barter Trade, Re-export, and other methods are used for exports. Trade can only be exported to Thailand and Bangladesh with a signed Account Trade.

2.2   Foreign Direct Investment

FDI refers to investment made by foreign entities in a country's businesses or infrastructure. FDI can contribute to economic growth by bringing in capital, technology, expertise, and job opportunities. It can help boost productivity, expand industries, and stimulate overall economic development.

Since 2010, Myanmar has experienced a sudden increase in FDI as a result of political changes that resulted in the country's first civilian government in nearly 50 years, which attracted FDI from other nations. FDI averaged 459.63 USD Million from 2012 to 2022, reaching a record high of 3,821.91 USD Million in March of 2016. Prior to 2014, Myanmar was the second-most restrictive country in terms of FDI after Indonesia.

2.3   Inflation

Inflation, on its own, is not considered a direct driver of economic growth. Instead, it is an important indicator of price stability and can impact economic growth indirectly. High inflation rates can erode the purchasing power of consumers and businesses, leading to reduced spending, investment, and economic activity. Conversely, low and stable inflation can create a conducive environment for economic growth.

More jobs and higher wages increase household incomes and lead to a rise in consumer spending, further increasing aggregate demand and the scope for firms to increase the prices of their goods and services. When this happens across a large number of businesses and sectors, this leads to an increase in inflation.

The depreciating kyat, coupled with high global prices and ongoing logistics constraints, has led to a significant increase in import costs in Myanmar.

Inflation, as measured by the consumer price index, is the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or variable at specified intervals, such as annually. The years with the highest inflation rates in Myanmar from 1989 to 2019 were 1998 (51.5%), 2002 (57%), and 2007 (35%).

2.4 Gross Domestic Product

It is the monetary value of all finished goods & services produced in a country within a particular period of time. It is a crucial and most commonly used economic indicator to measure the economic growth and overall economic performance of a country.

The GDP calculation includes the value of goods and services produced by all sectors of the economy, including agriculture, manufacturing, construction, and services. It encompasses both private and public sector activities. However, it excludes intermediate goods and services, as well as transactions that do not involve production, such as financial transactions and transfer payments.

GDP serves as a key indicator for assessing the size and growth of an economy. It allows for international comparisons of economic performance, provides insights into income distribution, informs policy-making decisions, and serves as a basis for measuring economic productivity and living standards. However, it is important to note that GDP has limitations and does not capture non-market activities, income distribution disparities, environmental impacts, and overall well-being. As such, it is often used in conjunction with other indicators to provide a more comprehensive understanding of economic conditions.

The annual growth rate of the GDP at market prices and constant local currency. Aggregates are calculated in 2010 U.S. dollars at a constant rate. GDP is the sum of the gross value added by all resident producers in the economy, plus any product taxes and minus any subsidies not included in the product value. It is computed excluding depreciation of manufactured assets and depletion and degradation of natural resources. The GDP growth rate in Myanmar was -4.28% in 1989, 3.32% higher than in 1988, and 6.75 % in 2019, 0.35% higher than in 2018. - 4.28%.

2.5   Reviews of Previous Studies

One of the ambiguous factors that influence growth is inflation. Before the 1970s, it was a widespread belief that inflation had no significant effect on GDP growth, or if it did, it was positive. Tobin (1965) used the Solow model but extended it by adding money as an asset. It is a substitute for capital assets. The author suggests that the opportunity cost of holding money is preferable to accumulating capital, so inflation has a positive effect on growth.

Paul et al. (1997) examined that whether there was a causal relationship between the real growth of GDP and inflation in the long run. They used the Granger methodology to examine both the direction and pattern of causality between inflation and economic growth using a large sample of 70 countries using annual data over the period 1960–89. The main conclusion the researchers reached was that a single pattern cannot be used for all of the countries in the relationship between inflation and growth. According to them, around one-third of the sample countries do not have a relationship between these two factors, and in other cases, this relationship is ambiguous.

Hsiao and Hsiao (2006) examined the relationship between GDP, exports, and FDI in China, Korea, Taiwan, Hong Kong, Singapore, Malaysia, the Philippines, and Thailand, the eight rapidly developing East and Southeast Asian economies. They used time series and panel data from 1986 to 2004. They estimated the VAR and VECM of the three variables, GDP, exports, and FDI, to find various Granger causal relations for each of the eight economies. The findings suggested unidirectional causality from FDI to GDP and bidirectional causality between exports and GDP.

Agrawal and Khan (2011) studied the effect of FDI on the economic growth of China and India. They used data from the World Bank and UNCTAD (the United Nations Conference on Trade and Development). The period of the study was taken to be 1993–2009. They used the growth model and the OLS model by using the main variables GDP, Human Capital, Labor Force, FDI, and Gross Capital Formation. After running the OLS (Ordinary Least Squares) method of regression, they found that a 1% increase in FDI would result in a 0.07% increase in the GDP of China and a 0.02% increase in the GDP of India. They also found that China's growth is more affected by FDI than India's.

Omankhanlen (2011) studied the effects of inflation, the exchange rate, and the bidirectional influences between FDI and economic growth in Nigeria. He used Time series data and five variables: exchange rate, gross capital, government expenditure,

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inflation, and FDI. A linear regression analysis was used to determine the relationship between inflation, the exchange rate, FDI inflows, and economic growth. The researcher found that FDI follows economic growth occasioned by trade openness, inflation has no effect on FDI, and the exchange rate has an effect on FDI.

Aziz and Azmi (2017) investigated the relationship between GDP growth, inflation, FDI, and Female Labor Force Participation in Malaysia. They used annual time series data from 1982 to 2013. For analysis, they used the Ordinary Least Squares Method OLS and Augmented Dickey-Fuller (ADF). They found that FDI and Female Labor Forces have a positive impact on GDP growth, and FDI is the only variable that contributes significantly to GDP growth in Malaysia. Moreover, inflation correlates negatively with GDP growth, but it is not a significant factor in GDP growth in Malaysia. The paper's findings suggest that by stabilizing inflation, the Malaysian government can increase taxes and reduce government spending to reduce inflationary pressure.

Sann (2017) analyzed the short-run and long-run impact of exports on the economic growth of Myanmar while imports and foreign direct investment were control variables for the period 1990–2015 by using annual data on GDP, exports, imports, and FDI in Myanmar. The author used the ARDL model to describe a statistically significant long-run positive relationship between exports and gross domestic product in Myanmar. The study found that exports and FDI have positive effects on economic growth, while imports have positively insignificant in the long run. Exports and FDI have positive effects on economic growth, while imports have positively insignificant in the long run. In conclusion, the researcher suggested policy implications that focus on economic stability, new SME capabilities, and openness policies within the country.

Mansoor and Bibi (2018) studied the effect of foreign direct investment and real exchange rates on the growth rate of Pakistan. The data composed for this study had a time duration of 1980 to 2016 for the world development indicator. They used the unit root test to check the stationarity of the data, and then they used ARDL regression. They studied the causality of the bidirectional and unidirectional relationships among the variables. In their findings, the results showed both long-run and short-run relationships. Their research found that in a short-run relationship, the GDP is positively influenced by the dependent variables, and there is a weak relationship between GDP, the real exchange rate, and inflation.

Htoo Htet Htet (2022) investigated that how FDI affects the economic growth of ASEAN countries. For this research, the researcher used secondary data from the World Bank. the source of data obtained for the period of 2002 to 2019. The OLS model was used to analyze researchers found that although FDI has a favorable impact on ASEAN economic growth, human capital, domestic investment, and trade were not positive in ASEAN countries. The conclusive finding was that FDI effects on economic growth are independent of the human capital level, and if they have higher human capital, they will have greater economic growth and FDI inflows.

CHAPTER III
METHODOLOGY

This chapter outlines the methodology employed in the study to achieve the research objectives. With a quantitative research approach, descriptive statistics, Pearson's correlation coefficient analysis, and multiple regression model were used in this study to analyze the relationship between exports, FDI, inflation, and GDP in Myanmar.

3.1 Descriptive Statistics

Descriptive statistics are brief informational coefficients that summarize a given data set, which can be either a representation of the entire population or a sample of a population. The descriptive statistics such as mean, minimum value, maximum value, standard deviation and variance are described in the study.

Mean/ Average

This measure of central tendency summarizes the data, by considering a value which is an estimate of the total data set. It helps us to ascertain the spread in variables between the minimum and maximum values.

(i) Sample Mean

The sample mean, often denoted as x̄ (pronounced "x-bar"), is a measure of central tendency that represents the average value of a sample. It is calculated using the following formula:

$$\bar{x} = \frac{(x_1 + x_2 + x_2 + \cdots + x_n)}{n}$$

where:

$x_1, x_2, x_3, ..., x_n$ are the individual values in the sample.

n is the total number of observations in the sample.

(ii) Population Mean

The population mean, denoted by the symbol μ (pronounced "mu"), is a measure of central tendency that represents the average value of a population. It is calculated using the following formula:

$$\mu = \frac{(\sum X)}{N}$$

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where:

ΣX represents the sum of all the individual values in the population.

N is the total number of observations in the population.

To calculate the population mean, all the individual values in the population are summed up and divided the sum by the total number of observations. This provides the average value or the population means. Note that the population mean is a parameter that describes the entire population, whereas the sample mean is an estimate of the population mean based on a sample from the population.

Variance

The variance is a measure of variability that utilizes all the data.

It is based on the difference between the value of each observation (xi) and the mean (x for a sample, N for a population).

(i)   Sample Variance

The sample variance, denoted as S^2 (pronounced "s squared"), is a measure of the dispersion or spread of a sample. It estimates the average of the squared deviations of individual values from the sample mean. The sample variance is calculated using the following formula:

$$S^2 = \frac{\sum (x_i - \bar{x})^2}{n - 1}$$

where:

x is an individual value in the sample.

$\bar{x}$ is the sample mean.

n is the total number of observations in the sample.

(ii)   Population Variance

The population variance, denoted as σ^2 (pronounced "sigma squared"), is a measure of the dispersion or spread of a population. It represents the average of the squared deviations of individual values from the population mean. The population variance is calculated using the following formula:

$$\sigma^2 = \frac{\sum (x_i - \mu)^2}{N}$$

where:

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X is an individual value in the population.

μ is the population mean.

N is the total number of observations in the population.

Standard Deviation

The standard deviation of a data set is the positive square root of the variance. It is measured in the same units as the data, making it more easily comparable, than the variance, to the mean.

If the data set is a sample, the standard deviation is denoted s.

If the data set is a population, the standard deviation is denoted s (sigma).

The standard deviation is a measure of the dispersion or spread of a dataset, representing the average amount by which each data point deviates from the mean. It is often denoted as σ (pronounced "sigma") for the population standard deviation and s for the sample standard deviation. The standard deviation is calculated using the following formulas:

(i)   **For Population Standard Deviation:**

$$\sigma = \sqrt{\frac{\Sigma(x_i - \mu)^2}{N}}$$

where:

X is an individual value in the population.

μ is the population mean.

N is the total number of observations in the population.

(ii)   **For Sample Standard Deviation:**

$$S = \sqrt{\frac{\Sigma(X - \bar{x})^2}{n - 1}}$$

where:

x is an individual value in the sample.

x̄ is the sample mean.

n is the total number of observations in the sample.

3.2   Pearson's Product Moment Correlation Coefficient

The Pearson's correlation coefficient tells us two aspects of the relationship between two variables. The sign (- or +) for r identifies the kind of relationship between

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the two quantitative variables, and the magnitude of r describes the strength of relationship.

The mathematical formula for the Pearson's correlation coefficient r is as follows.

$$r = \frac{n\Sigma X_i Y_i - \Sigma X_i \Sigma Y_i}{\sqrt{[n\Sigma X_i^2 - (\Sigma X_i)^2][n\Sigma Y_i^2 - (\Sigma Y_i)^2]}}$$

where

r	= correlation coefficient
n	= number of observations
Σxy	= sum of the product of x and y
Σx^2	= sum of squares of values of variable x
$(\Sigma x)^2$	= square of the sum of all the values of variable x

The magnitude of the correlation lies between -1 and 1 this means that $-1 \leq r \leq 1$.

The value of correlation coefficient that is close to -1 indicates that the two variables have a strong negative relationship. Negative relationship means that an increase in one variable causes another variable to decrease, and vice versa. On the other hand, a value that is close to 1 indicates that the two variables have a strong positive relationship. Positive relationship means that an increase in one variable will cause the other variable to increase, and vice versa.

3.3   Multiple Linear Regression Model

Linear regression attempts to model the relationship between two variables by fitting a linear equation to observe data. One variable is considered to be an explanatory variable, and the other is considered to be dependent variable. Before attempting to fit a linear model to observe data, a model should first determine whether or not there is a relationship between the variables of interest. The equation can be interpreted as prediction equation if the independent variables precede the dependent variable. Multiple regression model take the following form;

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + ... + \beta_k X_{ki} + e_i; \quad i = 1, 2..., n$$

where;

Y_i	= value of the dependent variable in the ith trial
β_0	= constant in the regression equation

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$\beta_1,...,\beta_k$ = regression coefficients associated with each of the X_k independent variable

X_{ij} = value of the jth independent variable in the ith trail

e_i = the random error in the ith trail or observation

3.3.1 Assumptions of the Multiple Linear Regression Model

The following are the assumptions of multiple regression models

1. Multiple linear regression needs the relationship between the dependent variable and independent variables to be linear. It is also important to check outliers since multiple linear regression is sensitive to outlier effects.

2. The multiple linear regression analysis requires that the error between observed and predicted values (i.e., the residuals of the regression) should be normally distributed.

3. The error of the mean is uncorrelated; that is that the standard mean error of the dependent variable is independent from the independent variables.

4. The multiple linear regression analysis makes homoscedasticity

5. There is no multicollinearity. That is, there is no linear relationship among the independent variables.

3.3.2 Test for Significance of Overall Multiple Regression Model

The F test is used to determine whether there exists a significant relationship between the dependent variable and the entire set of independent variables in the model. The ANOVA procedure tests the null hypothesis that all the β values are zero against the alternative that at least one β is not zero.

H_0 : $\beta_1 = \beta_2 = \beta_3 = \cdots = \beta_k = 0$

H_a : At least one β is not zero.

Table (3.1) provides the format for an ANOV table for multiple regression.

Table (3.1) ANOVA Table

Source of Variation	Sum of Squares	Degree of Freedom (df)	Mean Square	F-value
Between samples (treatment)	SSR	K	$\dfrac{SSR}{k}$	$F = \dfrac{MSR}{MSE}$
Within samples (error)	SSE	$n - k - 1$	$\dfrac{SSE}{n - k - 1}$	
Total variation	SST			

If the null is not rejected, then there is no linear relationship between Y-variable and any of the independent variables. On the other hands, if the null is rejected then at least one independent variable is linearly related to Y.

3.3.3 Testing Individual Partial Regression Coefficients

The next logical step is to test each coefficient individually to determine which one (or ones) is significant.

$H_0 : \beta_i = 0$

$H_a : \beta_i \neq 0$

The t-test statistic is

$$t = \frac{b_i - 0}{S_{bi}}$$

Where

b_i is the individual coefficient being tested

S_{bi} is the standard error of b_i

If the P-value is less than the significant level, the null hypothesis is rejected.

3.3.4 The Coefficient of Multiple Determination (R)

The coefficient of determination can be calculated by using the errors sum of squares (SSE) and regression sum of square (SSR), and total sum of square (SST). The coefficient of multiple determination is defined as;

$$R^2 = \frac{SSR}{SSTO} = 1 - \frac{SSE}{SST}$$

The R^2 measures the variation in Y that is explained by the independent variable X in the simple linear regression model. In multiple regression, the coefficient of multiple determination represents the proportion of the variation in Y that is explained by the set of independent variables. The value of the coefficient of multiple determination will be between zero and one.

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CHAPTER IV

RESULTS AND FINDINGS

This chapter presents the analysis of secondary data, collected from the World Bank. The descriptive statistics for GDP, FDI, exports, and inflation, correlation analysis between GDP and FDI, exports, and inflation, and multiple regression analysis of GDP were described.

4.1 Descriptive Statistics for Gross Domestic Product

The descriptive statistics of GDP in Myanmar from 1989 to 2019 periods are shown in Table (4.1).

Table (4.1) Descriptive Statistics for GDP (current US$)

Descriptive Statistics	US$ in Million
Mean	27097.288
Median	10588.433
Minimum	2036.373
Maximum	78930.257
Standard deviation	26989.942
Skewness	0.653
Kurtosis	-1.375

Source: SPSS Output

As shown in the Table (4.1), the mean GDP is USD 27097.288 million. The median GDP is USD 10588.433 million, which represents the middle value in the distribution. The minimum of GDP is USD 2036.373 million but the maximum is USD 78930.257 million. The standard deviation is approximately USD 26989.942 million, indicating the variability of the GDP values. The skewness value of 0.653 suggests a positive skewed, meaning that the GDP distribution is skewed towards higher values. The kurtosis value of -1.375 indicates that the GDP distribution is platykurtic, meaning it has lighter tails and is less peaked compared to a normal distribution.

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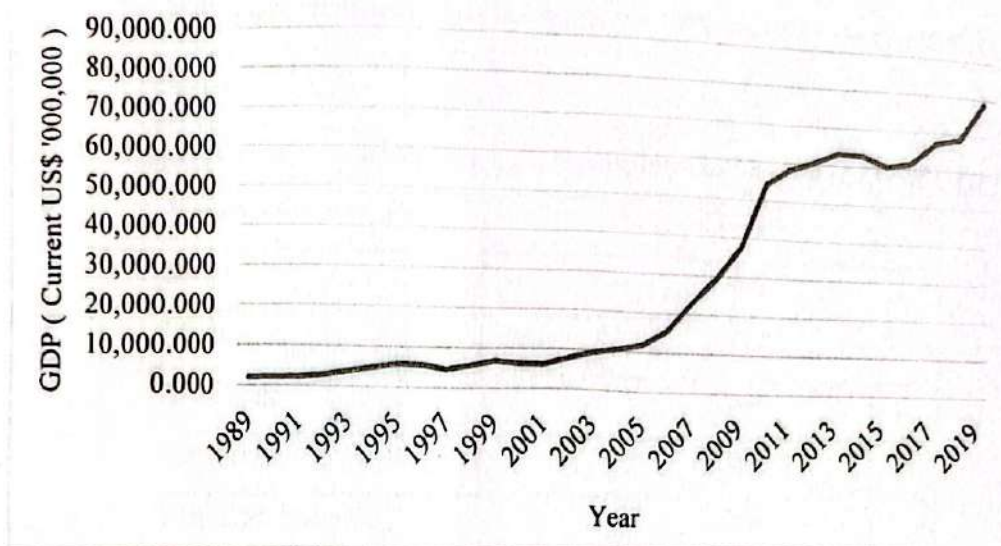
Figure (4.1) Line Chart of the GDP (Current US$) in Myanmar from 1989 to 2019

Figure (4.1) shows the line chart of the GDP in Myanmar from 1989 to 2019. The GDP in Myanmar in overall trend has shown an upward trend over the years, indicating economic growth and expansion. From 1989 to around 2002, the GDP had a relatively gradual and steady growth pattern, with fluctuations but a general upward trend. From around 2002 to 2014, there was a significant acceleration in GDP growth, as indicated by a steeper upward slope on the chart. This period saw rapid economic expansion in Myanmar.

In some years, there are noticeable fluctuations in GDP, such as a dip in 1997 and a significant increase in 2004. These fluctuations could be influenced by various factors such as economic policies, global economic conditions, and domestic events. In the more recent years (2015-2019), there seems to be a slight dip in the GDP growth rate, as the slope of the line becomes less steep. However, the overall trend remains positive, indicating continued economic growth.

It's important to note that this analysis is based solely on the provided GDP data, and a more comprehensive analysis would require considering additional factors and economic indicators.

4.2 Descriptive Statistics for Foreign Direct Investment

The descriptive statistics of FDI in Myanmar's 1989 to 2019 periods are shown in Table (4.2).

Table (4.2) Descriptive Statistics for FDI, Net Inflows in Myanmar (% of GDP)

Descriptive Statistics	% of GDP
Mean	4.400
Median	3.722
Minimum	0.466
Maximum	11.138
Standard deviation	2.278
Skewness	1.009
Kurtosis	1.134

Source: SPSS Output

As shown in the Table (4.2), the mean Myanmar over the given time period is approximately 4.400. This represents the central tendency or the typical value of FDI. The median value of FDI is 3.722. This indicates that half of the FDI observations fall below this value and half fall above it. It provides a measure of the central value that is not affected by extreme values. The minimum FDI value recorded in Myanmar is 0.466. The maximum FDI value recorded in Myanmar is 11.138. The standard deviation of FDI is 2.278. It measures the dispersion or variability of FDI values around the mean. A higher standard deviation indicates a wider spread of values. The skewness value of 1.009 indicates that the distribution of FDI values is positively skewed. This means that the distribution has a longer tail on the right side and the majority of FDI values are concentrated towards the lower end. The kurtosis value of 1.134 suggests that the distribution of FDI values has a slightly heavier tail and is slightly more peaked than a normal distribution.
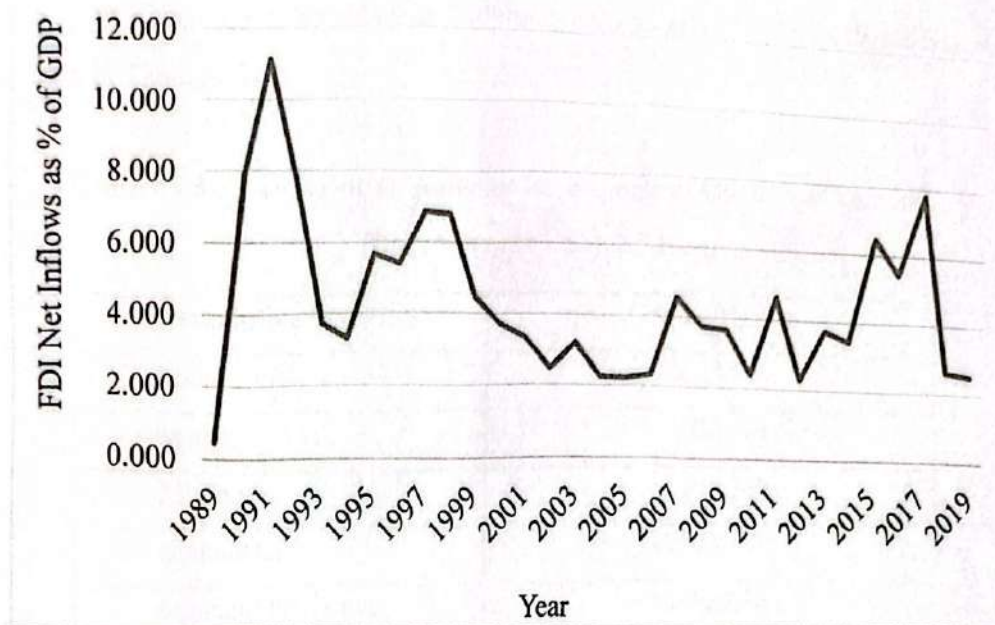
Figure (4.2) **Line Chart of the FDI, Net Inflows (% of GDP) in Myanmar from 1989 to 2019**

Figure (4.2) shows the line chart of the FDI as a percentage of GDP in Myanmar from 1989 to 2019. The line chart shows fluctuations in FDI as a percentage of GDP over the years. There is no consistent upward or downward trend observed.

The FDI percentage peaked at 11.139% in 1991, indicating a significant influx of foreign investment during that year. The lowest point was recorded in 1989, with FDI at 0.466% of GDP.

From 2002 to 2006, FDI remained relatively stable as a percentage of GDP, with values ranging between 2.219% and 2.463%.

In recent years, there have been fluctuations in FDI as a percentage of GDP, with higher values observed in 2017 (7.818%) and lower values in 2018 (2.633%).

4.3 Descriptive Statistics for Exports

The descriptive statistics of Exports in Myanmar's 1989 to 2019 periods are shown in Table (4.3).

Table (4.3)   Descriptive Statistics for Exports of Goods and Services (BoP, Current US$) in Myanmar

Descriptive Statistics	US$ in Million
Mean	5638.498
Median	2920.281
Minimum	279.363
Maximum	17523.382
Standard deviation	5306.694
Skewness	0.866
Kurtosis	-0.614

Source: SPSS Output

As shown in the Table (4.3), The mean value of exports in Myanmar is approximately USD 5638.498 million. This represents the average value of exports over the given period. The median value of exports in Myanmar is approximately USD 2920.281 million. This represents the middle value of exports. The minimum value of exports in Myanmar is approximately USD 279.363 million. The maximum value of exports in Myanmar is approximately USD 17523.382 million. This represents the highest recorded value of exports during the analyzed period. The standard deviation of exports in Myanmar is approximately USD 5306.694 million. This indicates the extent of variability or dispersion in the export values from the mean. A higher standard deviation suggests a greater degree of variation in the data. The skewness of exports in Myanmar is approximately 0.866. A positive skewness value indicates that the distribution of export values is skewed towards the right, meaning there is a long tail on the right side of the distribution. The kurtosis of exports in Myanmar is approximately -0.614. A negative kurtosis value suggests that the distribution of exports values is less peaked and has lighter tails compared to a normal distribution.
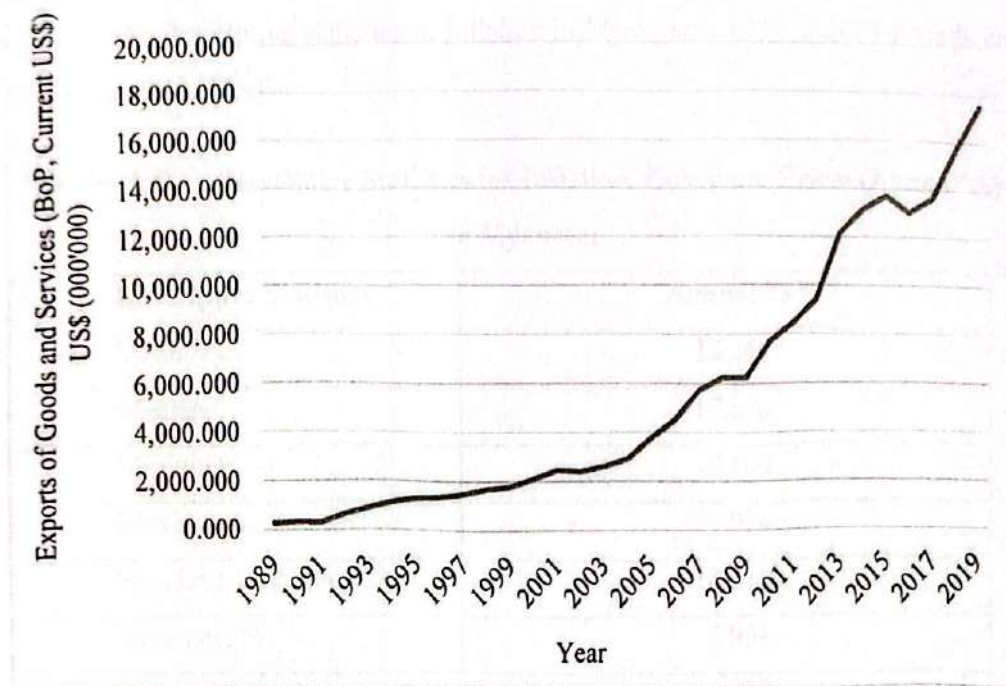
Figure (4.3)   Line Chart of the Exports of Goods and Services (BoP, Current US$) in Myanmar from 1989 to 2019

Figure (4.3) shows the line chart shows the Exports of goods and services in Myanmar from 1989 to 2019. The line chart shows an increasing trend in exports from 1989 to 2019, with some fluctuations in between. Initially, the exports were relatively low, but they started to rise consistently from around 1992. The growth rate accelerated in the late 1990s and early 2000s, with exports more than doubling in value. There was a significant increase in exports from around 2005 to 2015, reaching a peak level. After 2015, the exports experienced some fluctuations but remained at a relatively high level. Overall, the trend pattern suggests a positive and upward trajectory in Myanmar's exports of goods and services. The increasing exports indicate economic growth and development in the country.

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4.4 Descriptive Statistics for Inflation

The descriptive statistics of Inflation in Myanmar's 1989 to 2019 periods are shown in Table (4.4).

Table (4.4)   Descriptive Statistics for Inflation, Consumer Prices (Annual %) in Myanmar

Descriptive Statistics	Annual %
Mean	18.364
Median	17.626
Minimum	-0.109
Maximum	57.074
Standard deviation	14.613
Skewness	0.901
Kurtosis	0.470

Source: SPSS Output

As shown in the Table (4.4), The mean inflation rate in Myanmar during the given period is approximately 18.364. This indicates that, on average, the general price level increased by 18.364% per year. The median inflation rate is 17.626, which represents the middle value in the dataset. It suggests that half of the inflation rates fall below 17.626, and the other half fall above it. The minimum inflation rate recorded is - 0.109, indicating a slight deflation during certain periods. Negative inflation implies a decrease in the general price level, leading to a decrease in the purchasing power of money. The maximum inflation rate is 57.074, signifying a significant increase in the general price level during certain periods. High inflation can erode the value of money and negatively impact the economy. The standard deviation measures the dispersion of inflation rates around the mean. With a value of 14.613, it indicates that the inflation rates vary considerably from the average value, suggesting a significant degree of volatility in the price levels. The skewness value of 0.901 indicates a positive skewness in the distribution of inflation rates. This means that there is a long tail on the right side of the distribution, indicating that extreme positive inflation rates are relatively more common than extreme negative rates. The kurtosis value of 0.470 suggests a moderately peaked distribution. It indicates that the inflation rates in Myanmar are generally close to the mean and do not exhibit significant outliers or extreme values.

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Overall, the descriptive statistics suggest that inflation in Myanmar has experienced fluctuations and variability over the given period, with both positive and negative inflation rates observed. The positive skewness suggests a tendency towards higher inflation, while the moderate kurtosis indicates a relatively stable distribution of inflation rates.
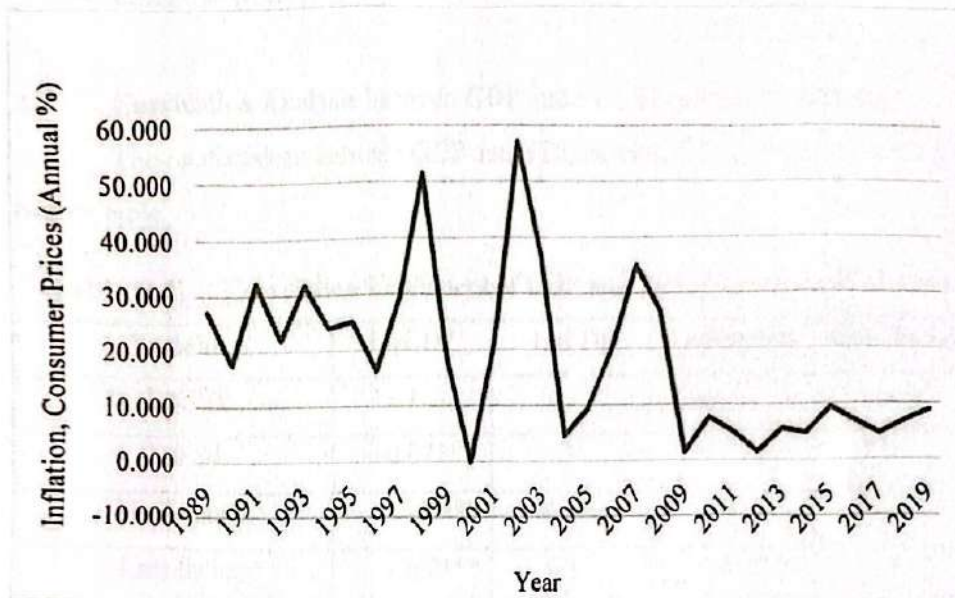
Figure (4.4) **Line Chart of the Inflation, Consumer Prices (Annual %) in Myanmar from 1989 to 2019**

Figure (4.4) shows the line chart illustrates the trend of inflation in Myanmar from 1989 to 2019. The x-axis represents the years, while the y-axis represents the inflation rate, measured as the annual percentage change in consumer prices.

From 1989 to 1990, there was a significant decrease in inflation, with the rate declining from 27.199% to 17.627%. This indicates a period of relatively lower price increases.

From 1990 to 2002, the inflation rate varied considerably, showing an upward trend with some fluctuations. The inflation rate reached its highest point in 2002 at 57.075%, reflecting a period of high inflation and rapidly increasing consumer prices.

After 2002, there was a notable decrease in inflation until around 2009, with the rate fluctuating between negative values and single-digit percentages. This indicates a period of relatively lower inflation and, in some cases, even deflation.

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From 2009 to 2015, the inflation rate remained relatively moderate, fluctuating between 1.47% and 9.45%. This suggests a period of relatively stable inflation, with moderate price increases.

In recent years, from 2015 to 2019, there has been a gradual increase in inflation, with the rate ranging from 4.57% to 8.83%. This indicates a slight upward trend in consumer prices during this period.

4.5 Correlation Analysis between GDP and FDI, Exports, and Inflation

The relationships between GDP and, FDI, exports, inflation were described in below table.

Table (4.5)   Correlation Coefficient of GDP and FDI, Exports and Inflation

Variables	LnGDP	LnFDI	LnExports	LnInflation
LnGDP	1			
LnFDI	-0.077	1		
LnExports	.973***	-0.069	1	
LnInflation	-.700***	0.12	-.618***	1

***. Correlation is significant at the 0.01 level (2-tailed).

Table (4.5) shows the Pearson correlation coefficient of the GDP and FDI, Exports, and Inflation). According to the results, the exports and GDP are a strongly positive relationship at a 1% significance level. Furthermore, inflation and GDP are negatively related at the 1% significance level.

4.6 Multiple Linear Regression Model for GDP

Linear regression attempts to draw a line that comes closest to the data by finding the slope and intercept that defines the line and minimizes regression error. If two or more explanatory variables have a linear relationship with the dependent variable, the regression is called a multiple linear regression. This study focused on the GDP from 1989 to 2019. FDI, exports, and inflation were used to determine their influence on the GDP in Myanmar. The model of nonlinear relationship is converted into linear by using log-log multiple linear regressions.

The general log-log multiple linear regression model for GDP is as follows;

$$lnGDP = \beta_0 + \beta_1 \, LnFDI + \beta_2 \, LnExports + \beta_3 \, LnInflation$$

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where;

lnGDP   = Log of GDP

LnFDI   = Log of FDI

LnExports   = Log of Exports

LnInflation = Log of inflation

The results of multiple regression analysis are described in Table (4.6).

Table (4.6)   Results of Multiple Linear Regression Model for

Gross Domestic Product

Variables	Coefficient	Std. Error	t	Sig	VIF
Constant	4.464	1.140	3.917	0.001	
LnFDI	0.002	0.077	0.022	0.983	1.015
LnExports	0.889***	0.047	18.860	0.000	1.617
LnInflation	-0.206***	0.061	-3.373	0.002	1.633
R	0.982				
R^2	0.965				
Adjusted R^2	0.961				
F-value	240.499 (P-value=0.000)				

***. Correlation is significant at the 0.01 level (2-tailed).

According to Table (4.6), the estimated multiple regression model is:

$$Ln\widehat{GDP} = 4.464 + 0.002 LnFDI + 0.889 LnExports - 0.206 LnInflation$$

It is found that the R^2 value and adjusted R^2 are (0.965) and (0.961), respectively. The value of adjusted R^2 (0.965) represents 96.5% of the variation in the GDP that was explained by the FDI, Exports, and Inflation factors in Myanmar.

Regarding the results of multiple regression analysis, this model is significant at a 1% level. It can be seen that there is a relationship between GDP and FDI, Inflation, and Exports.

The coefficient of exports was significant at the 1% level. The coefficient of exports was 0.889. Therefore, an increase in exports will increase the GDP in Myanmar. The coefficient of inflation was significant at the 1% level and its value was -0.206. Therefore, an increase in inflation will decrease the GDP in Myanmar.

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CHAPTER V
CONCLUSION

This chapter presents the findings from data analysis, discussion, and recommendations on export promotion, inflation management, FDI attraction, and finally on further research.

5.1 Findings

After conducting a thorough analysis of the data and applying various statistical techniques, several key findings have emerged regarding the relationship between GDP and the factors of FDI, Exports, and Inflation in Myanmar. The findings are summarized as follows:

The line chart demonstrates an overall upward trend in Myanmar's GDP, indicating economic growth despite fluctuations and notable events.

Exports of goods and services display a positive and increasing trend, reflecting economic growth. The correlation analysis revealed a significant correlation between exports and GDP, indicating that an increase in exports is associated with an increase in GDP. The multiple regression analysis further confirmed this relationship, with exports being a significant predictor of GDP. These indicate there is a strong positive relationship between exports and GDP.

The correlation analysis highlights a strong negative relationship between inflation and GDP. Multiple regression analysis confirms a significant negative correlation between these two variables. These suggest that an increase in inflation tends to lead to a decrease in GDP and shows a negative relationship between inflation and GDP.

FDI as a percentage of GDP exhibits inconsistent trends over time. The correlation analysis and multiple regression analysis both showed a non-significant correlation between these variables. This implies that FDI may not be a strong determinant of GDP in the context of Myanmar, at least based on the variables considered in this study. Therefore, the study found that there is no relationship between FDI and GDP in Myanmar.

In conclusion, this study highlights the significance of Exports and Inflation in shaping GDP in Myanmar. By focusing on export promotion, inflation management, and creating a conducive environment for foreign investment, Myanmar can foster sustainable economic growth and development. Policymakers should carefully consider

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these findings and recommendations when formulating strategies for the country's economic advancement.

5.2 Discussion and Recommendation

Based on the findings discussed above, it is evident that Exports and Inflation play crucial roles in influencing GDP in Myanmar. Therefore, policymakers should focus on strategies that promote and support the export sector while ensuring effective measures to manage inflation. Some recommendations for policymakers and stakeholders are as follows:

(i) Export Promotion: Efforts should be made to enhance the competitiveness of Myanmar's exports in the global market. This can be achieved through investment in infrastructure, technology, and skills development, as well as the provision of financial incentives and export-oriented policies. Encouraging diversification of exports and exploring new markets should also be prioritized.

(ii) Inflation Management: It is important for policymakers to carefully manage inflationary pressures to ensure sustainable economic growth. To maintain a stable economic environment, policymakers should implement effective monetary and fiscal policies to manage inflation. This may involve measures such as controlling the money supply, monitoring price levels, and ensuring a stable exchange rate. Additionally, efforts should be made to address the root causes of inflation, such as supply-side constraints and structural issues.

(iii) FDI Attraction: The study found that there is no relationship between FDI and GDP, however, attracting foreign direct investment remains important for overall economic development. Policymakers should create an attractive investment climate by improving infrastructure, streamlining regulations, providing incentives, and promoting transparency. Focusing on sectors with high growth potential and facilitating technology transfer can further enhance the impact of FDI on economic growth.

5.3 Further Research

While this study provides valuable insights into the relationship between GDP and the factors considered, further research is recommended to explore additional variables and their impact on Myanmar's economy. Factors such as government policies, political stability, human capital, and trade agreements could be investigated to gain a more comprehensive understanding of economic growth determinants.

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APPENDIX

Appendix Table

Yearly GDP, FDI, Exports, and Inflation of Myanmar (1989-2019)

	MMR	MMR	MMR	MMR
	GDP (current US$)	Foreign direct investment, net inflows (% of GDP)	Exports of goods and services (BoP, current US$)	Inflation, consumer prices (annual %)
	NY.GDP. MKTP.CD	BX.KLT.DINV. WD.GD.ZS	BX.GSR. GNFS.CD	FP.CPI. TOTL.ZG
Year	US$ in Million	(% of GDP)	US$ in Million	(annual %)
1989	2,036.374	0.466	279.364	27.199
1990	2,137.185	7.913	316.034	17.627
1991	2,216.073	11.139	304.233	32.272
1992	2,809.748	7.742	643.678	21.913
1993	3,821.536	3.725	877.447	31.832
1994	4,879.258	3.300	1,128.078	24.099
1995	5,759.625	5.681	1,294.171	25.195
1996	5,633.071	5.390	1,365.618	16.275
1997	4,613.071	6.873	1,496.204	29.697
1998	5,643.819	6.817	1,691.294	51.488
1999	6,849.322	4.485	1,788.167	18.401
2000	6,220.271	3.720	2,109.742	-0.109
2001	6,110.633	3.349	2,470.759	21.101
2002	7,754.647	2.463	2,422.401	57.075
2003	9,390.855	3.209	2,609.395	36.590
2004	10,588.433	2.251	2,920.282	4.534
2005	11,863.016	2.218	3,783.093	9.369
2006	15,591.183	2.325	4,535.322	19.996
2007	23,013.016	4.553	5,737.336	35.025
2008	29,455.166	3.754	6,262.077	26.800
2009	37,796.053	3.663	6,252.640	1.472
2010	54,118.602	2.384	7,703.970	7.718
2011	58,318.678	4.656	8,457.499	5.021
2012	60,572.257	2.287	9,451.616	1.468
2013	63,264.893	3.722	12,149.576	5.643
2014	63,045.305	3.438	13,140.685	4.953
2015	60,291.737	6.478	13,706.078	9.454
2016	61,449.392	5.437	13,016.828	6.929
2017	67,144.726	7.818	13,628.672	4.573
2018	68,697.759	2.633	15,727.812	6.872
2019	78,930.257	2.526	17,523.382	8.825

Data Source: World Development Indicators, World Bank

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